AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Reproductive Biotechnology in Animal Production								
Course Code	VDJ637		Couse Level	Third Cycle (Doctorate Degree)					
ECTS Credit	4	Workload	100 *(Hours)*	Theory	1	Practice	2	Laboratory	0
Objectives of the Course	To gain basic knowledge about reproductive biotechnology and demonstrate the applicability of these in the field of veterinary medicine. Determining some biotechnological methods which include application areas to development of country's farming								
Course Content	Usage and development of some actual biotechnological applications in veterinary gynecology								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Case Study, Project Based Study, Individual Study								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	60
Assignment	4	20

Recommended or Required Reading	
1	Alaçam, E. (2002) Doğum ve İnfertilite, Medisan Yayınları, Ankara
2	Noakes, D.E., Parkinson, T.J., England, G.C.W. (2001) Artur'sVeterinaryReproductionandObstetrics, W.B. SaundersComp., Philadelphia
3	Hafez, E.S.E. (1993) Reproduction in Farm Animals, Lea&Febiger, Philadelphia
4	Dinç, D.A. (2008) Ultrason fiziği ve ineklerde reprodüktif ultrasonografi, Pozitif Matbaacılık Ltd. Şti, Ankara

Week	Weekly Detailed Course Contents	
1	Theoretical	Definition of in vitro embryo production, advantages of in vitro embryo production, factors affecting the success in vitro embryo production
	Practice	Methos for used to obtain oocytes from slaughterhouse material
2	Theoretical	Methods for used obtaining oocytes from slaughterhouse material, aspiration, slicing and dissection methods, mediums used in washing os oocytes
	Practice	Methos for used to obtain oocytes from slaughterhouse material
3	Theoretical	Methods for used obtaining oocytes and embryo from live animals; obtain oocytes and embryo with surgical method, transvaginally collection of oocytes and embryos with ultrason-guided (Ovum pick up; OPU)
	Practice	Methods for obtaining oocytes and embryo from live animals
4	Theoretical	Maturation of immature oocytes under laboratory conditions (in vitro maturation; IVM)
	Practice	Methods for obtaining oocytes and embryo from live animals
5	Theoretical	Fertilization of in vitro maturated oocytes in laboratory (in vitro fertilization; IVF) methods are the most commonly used for preparation of sperm: swim-up and perkol separation methods
	Practice	Methods for obtaining oocytes and embryo from live animals
6	Theoretical	Sperm injection
	Practice	Maturation of immature oocytes under laboratory conditions
7	Theoretical	Classification of embryos according to development stage: oosperm, two cells, four cells, eight cells, sixteen cells, morula, blastocyst; morphologic evaluation in embryos; very good, good, medium and weak
	Practice	Fertilisation of in vitro matured oocytes in laboratory
8	Theoretical	Culture medias used for development of embryos after IVF; in vivo and in vitro culture media; medias used for in vitro culture; co-culture, definition contents, simple and nondefinition contents complex culture medias
	Practice	Fertilisation of in vitro matured oocytes in laboratory
9	Intermediate Exam	Intermediate exam
10	Theoretical	Definion of cryopreservation, advantages and methods for used cryopreservation: slow freezing, fast freezing and vitrification

10	Practice	Sperm injection
11	Theoretical	Cryopreservation of oocytes and embryos, cryopreservation of oocyte tissue
	Practice	Classification of embryos according to development stage
12	Theoretical	Determination of embryos sex before transfer, advantages, methods for used determination of sex
	Practice	Classification of embryos according to development stage
13	Theoretical	what is transgenic, advantages of production transgenic animals, methods for used production of transgenic animals
	Practice	Preparation of culture medias in which embryos continuing development after IVF
14	Theoretical	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	1	14
Lecture - Practice	14	0	2	28
Assignment	4	0	2	8
Reading	14	0	2	28
Midterm Examination	1	10	1	11
Final Examination	1	10	1	11
			Total Workload (Hours)	100
			[Total Workload (Hours) / 25*] = **ECTS**	4

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	To gain basic informations about reproductive biotechnology
2	Learning in vitro production of embryo, cryopreservation of oocytes and embryos,
3	Learning intracytoplasmic sperm injection and production of chimeric animals
4	Learning production of transgenic farm animals and cloning subjects
5	Learning applicability of these methods in the field of veterinary medicine
6	Learning some biotechnological methods which include application areas to development of country’s farming

Programme Outcomes *(Obstetrics and Gynecology (Veterinary Medicine) Doctorate)*

1	Acquiring basic principles and establishing crucial links in the theory and practical aspects in the field of Obstetrics and Gynecology. Getting grip on the animal’s reproductive systems, organs, structures and their functional features.
2	Reproductive anatomy of the female animals, embriyonic development of the gonads, maturation, cellular and hormonal mechanisms of oogenesis and mechanisms of ovulation and transport of ovum. Sexual cycles of the female animals and their species related differences.
3	Being informed about the fertilisation, early embriyonic development, implantation and pregnancy. Fetal development, intrauterine life and detection of risked pregnancies. Learning to deal with the the issues of abortion. Knowing the hormonal and obstetrical aspects of normal parturition. Recognizing dystocia cases and being avare of predispozing and effective etiology of dystocia. Learning the initial approach to dystocia cases and learning to choose the appropiate intervention. Learning to apply the obstetrical methods.
4	Being informed about the puerperium and postpartum periods, learning the physiology and diagnosis and treatment of pathological conditions (metabolic, infectious and traumatic) during the transition period. Learn the ability to perform intrauterine applications. Acquiring right approaches on handling mother and the offspring in the puerperal period. Learning about the care and diseases of the newborn.
5	Gaining experience about the fertility parameters in the farm animals. Being informed about the diagnosis and therapy of infertility cases and management of them in the herd scale. Learning necessary precautions and management practices for establishing the reproductivity as a branch of herd health. Being informed about the effects of nutrition and management on reproduction.
6	Acquiring the knowledge of the hormones and their clinical applications, affecting reproduction directly or indirectly. Learning methods of sexual synchrnisation and appropiate timing of insemination or mating. Being able to administer medical and operative contraseptive methods to female animals. Being informed about asssisted reproductive techniques.
7	Administering specialized systematic examination of female animals, performing morphologic and functional examination of the female genitalia and mammary glands thus learning the diagnosis of hormonal, infectious, traumatic and tumoral diseases. Gaining skills in surgical therapy or/and elective gynaecological-oncological, udder and teat operations of the related diseases.
8	Having knowledge of the etiology, diagnosis and therapy of mastitis. Learning necessary precautions and management practices to control mastitis incidence in farm animals particularly in dariy enterprises. Having knowledge of etiology, diagnosis and therapy of circulatory disorders and infectious and non-infectious skin diseases.
9	Being informed about frequently used anesthetic methods and anesthetic agents, analgesics, antibiotics, liquid therapy and other medical agents. Gaining skills in solving problems due to reproductive emergency cases, being able to make definitive diagnosis by clinical symptomatic data and administer appropiate therapy in various animal species.

10	Learning methods and principles of scientific research, learn and acquire scientific ethics concept. Being avare of current developments by surveying and analyzing scientific literature. Gaining skills in interpreting classical knowledge of the scientific area to the students and the community.
11	Being able to plan, conduct and accomplish an original scintific study that can deliver novelty, develop a new scientific method or adopt a known method to a new area and present the results as a scientific article, in the area of obstetrics and gyaecology.

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5	L6
P1	4	4	5	4	3	3
P2		3	2			
P3	3					
P4				2		